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ABSTRACT

Remarks in this article were presented at the Conference on Management of Consolidated Research Institutions for Population Research, Washington, D.C., in February, 1970. Study is made of the process by which scientific and technical information in the population field must be identified, collected, stored, retrieved, translated, and disseminated as the world draws upon yesterday to lay a more rational groundwork today for a more promising future tomorrow. Users and audiences, lines of communication, and organizations engaged in dissemination of information in population fields are identified to indicate the complexity and requirements for moving scientific and technical information from the producer to the user. It is stressed that population knowledge be imparted in comprehensible form to those responsible for acting rationally. Lastly, proposals for action in the development of population information centers and resulting services are enumerated. (BL)

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BABEL OR BONANZA?
SCIENTIFIC AND TECHNICAL INFORMATION IN THE POPULATION FIELD *

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During these two days together we will be discussing ways in which population centers can generate fresh insights into man's pressing population dilemmas and hopefully point to promising courses of action rather than additional reasons for hopeless resignation. We will be attempting to characterize the best means of nourishing and expanding centers of excellence, so they can reach a "critical mass" to sustain a chain reaction of scholarship, research and intellectual creativity on an unprecedented scale commensurate with the unprecedented demographic disasters menacing human beings everywhere.

However, we must recognize that knowledge remaining in the head of the most creative scientist or languishing in a report gathering dust on a library shelf beyond the ken of those whose actions might be enlightened by such knowledge serves little if any useful purpose. Our increasing specialization and division of labor makes it even more essential that knowledge be imparted in comprehensible form to those responsible for acting rationally as clinicians, engineers, educators, scientists, policy makers, administrators, or simply as individuals trying to influence their own personal futures. Therefore, I will address myself today to the process by which scientific and technical information in the population field must be identified, collected, stored, retrieved, translated and disseminated

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as the world draws upon yesterday to lay a more rational groundwork today for a more promising future tomorrow.

Let's consider first the users of scientific and technical information or, if you will, the varied audiences to which our growing knowledge must be communicated. The nature of the potential user ideally determines not only the kinds of information he needs, but the form or the packaging of such information so that it will be most helpful to him in carrying out his responsibilities. Examining the information user in his natural habitat permits us to ask a series of questions, the answers to which may in many cases challenge our existing ways of doing business and hopefully help us speed the transformation of knowledge and ideas into innovative, contructive actions.

For example, scientists quickly think of other scientists, especially those of their own discipline, as the audience to which they wish to deliver the results of their studies. Timely reports of planned or ongoing research obviously facilitate early correspondence and exchange of ideas among members of the research fraternity who make up the so-called "invisible colleges" so important to the rapid exploitation of promising avenues for scientific inquiry and once the research has been completed, the findings, including negative results of experiments, must be rapidly disseminated to other scientists if they are to benefit vicariously from the new knowledge so painfully obtained. However, if science is to serve man most conscientiously, there are several other users or audiences for the researcher's findings whose needs or responsibilties may be such as to require "decoding" scientific reports into a form which these other users will find comprehensible and relevant to their needs.

Just as Egyptian hieroglyphics were incomprehensible to modern man before the Rosetta Stone was discovered, epidemiological reports on the incidence of untoward side-effects from a particular type of IUD or a particular oral contraceptive may be meaningless to the gynecologist or to the mid-wife until they are translated into a primer of recommended practice including contraindications for initial or continued use, advice and warnings to be given the patient, etc. Family planning program administrators may need their own unique Rosetta Stone to help them assess the significance of these new findings for the level and type of training needed by their clinical personnel and for the types of educational materials required to enhance effective cooperation by the woman in her own birth control regimen. Policy makers such as Congressmen and agency heads need still a different translation of the same research results to help them appraise potential public reaction and/or political consequences from continuing or modifying policies regarding the particular contraceptive. Science writers, journalists, and TV commentators often need the very same research results in still a different form in order to help place them in perspective and assess their importance in the eyes of the wider publics to which they address themselves through the mass media.

The predicament of the scientist in attempting to share the fruits of his intellectual labors with such disparate audiences is identical to the predicament of the practicing gynecologist, the nurse-midwife, the medical school dean, the high school teacher or the demographic or economic consultant to underdeveloped countries, whose experience relevant to the population problem he would like to share with others. Each of us tends to be cut off from communication with audiences outside our own particular

specialty and activity. Since population phenomena are so complex, the required multidisciplinary attacks on our problems are badly handicapped if communications are restricted to parochial or even incestuous channels.

As we think about getting timely, relevant, comprehensible scientific and technical information into the hands of those needing the information, let's not forget that communications should ideally be a two-way street. Serving the user effectively requires that we listen carefully to his need for certain kinds of information. If the kind of knowledge he needs literally does not exist, we have identified a topic requiring furthur research of either a fundamental or a directly applied nature to be taken into account in the determination of future research emphases and priorities. The more effective the process of two-way communications between researchers and information users the greater the likelihood that scientific undertakings will be relevant to the human condition and that action programs as well as policy decisions will be enlightened, intelligent, and salutary.

Since it seems unreasonable to burden the researcher with packaging his conclusions to satisfy the unique information needs of all these different audiences, one can readily see why there has been such a proliferation of scientific and technical information "middle men" valiantly trying with varying degrees of success to bridge the communication gaps between the researcher and numerous, diverse audiences. Now let's consider the plight of these middle men who seek to move scientific and technical information from the producer to the user. Time and space do not permit a complete enumeration of organizations now actively engaged in the acquisition, storage, retrieval, translation, and dissemination of information in the population field, but I would like to mention a few so that you may comprehend better why I call my paper "Babel or Bonanza".

Planned Parenthood World-Population publishes its quarterly Perspectives, which disseminate practical "how to do it" material concerning the design and development of family planning programs to approximately 25,000 individuals, hospitals, and health departments concerned in one way or another with family planning programs in the United States.

The Population Council in collaboration with the International Institute for the Study of Human Reproduction at Columbia University produces a variety of regular and occasional publications including Studies in Family Planning distributed monthly to approximately 7,000 recipients in the United States and abroad; Current Publications in Population Family Planning, which is a four page bibliography with abstracts of selected articles considered particularly noteworthy for administrators and scholars; Reports on Population-Family Planning which will cover 25 or so central topics setting out the latest knowledge and practice; Country Profiles which cover the nature, scope and accomplishments of population activities in each country based on a uniform outline designed to be useful to administrators; and a quarterly Population Chronicle designed to provide a reliable souce of sound information on developments in the population field to cabinet ministers, industrial and medical leaders, journalists, members of planning boards, civic leaders, etc.

The Scientific Information Centers Branch of NICHD has begun the experimental publication of Population Research Abstracts beamed in journal form primarily at members of the scientific disciplines whose efforts are supported by NICHD. In addition, the NICHD information group is attempting to provide on an annual basis a current listing of ongoing population research and training activities in the biological and behavioral sciences supported

by both government and private sources.

The Office of Population Research at Princeton University has published the Population Index since 1935 as an annotated international bibliography of publications concerned with demography.

The Population Reference Bureau produces,as educational tools for laymen, a number of publications dealing with the interaction of demographic, economic and social factors. Their Population Bulletin explores major issues in depth; Population Profiles covers similar topics but in more concentrated form; Readings in Population is an annotated bibliography of books; PRB Selections make available to their audiences statements or articles of unusual merit which have not been previously published or have appeared in journals with specialized circulation; and the World Population Data Sheet gives basic demographic information on over 100 countries and provides a source of information on current population trends.

The Department of Interior publishes monthly Population Trends and Environmental Policy containing abstracts of current interest on these topics.

The World Bank Group publishes articles and information in their several house organs about population and family planning as they relate to economic developments.

The Agency for International Development disseminates selected population information in the Development Digest as well as in their annual reports entitled Food for Peace and Population Program Assistance.

Dr. Donn Casey in Cambridge, England produces a monthly Bibliography of Reproduction and also periodic bibliographies on special topics as a primary effort of the Reproduction Research Information Service Limited.

In addition to the plethora of printed materials they distribute, these

and many other organizations usually attempt to answer specific requests for information within the limits imposed by their funds and the efficiency of their retrieval systems.

From this cursory Cook's Tour, we can readily see that even at present a great number of organizations and institutions, governmental and private, national and international, collect and/or disseminate data, reprints, abstracts and bibliographies of published literature and descriptions of ongoing research bearing on population and family planning concerns. And as population becomes increasingly an "in" thing to worry and talk about, scientific and technical information activities will surely multiply. For example, one can foresee increasing efforts by existing or future population centers to disseminate the results of their multidisciplinary thinking and research to the various audiences for whom such information might be useful. Linkages between such population centers will quite probably require greater formalization and coherence so that <u>each</u> population center may promptly benefit from the efforts of <u>all</u> such centers. In turn we may envision the growing need, which we are already experiencing, for linking a network of population centers with other kinds of multidisciplinary centers, such as those devoted to ecology, environment, urbanization, economic development and nutrition to facilitate exchanges of relevant information about phenomena which constitute the interfaces between population concerns and these other broad concerns. Although philosophically <u>all</u> knowledge constitutes a seamless web, we must, for purposes of meaningful <u>problem-solving,</u> concentrate on the kinds of information that constitute the central core of <u>population</u> knowledge while at the same time finding efficient ways to tap in to the various other bodies of related knowledge

to enhance both research and action on selected facets of the population problem.

The existing information activities concerned specifically with family planning and population matters have grown up for the most part independently of one another. Not surprisingly they vary greatly in quality, scope and subject matter and in the nature of the audiences they serve. We have been reviewing our information explosion in the population field and have held a series of discussions culminating in a two-day conference held last month at NICHD. As a result a number of us have come to the conclusion that both research and action efforts will be advanced by developing a coherent international network of population libraries, scientific and technical information centers, data banks, etc., which will operate on a voluntary, cooperative basis with the Center for Population Research serving as an executive secretariat until such time as some international agency can muster the will and the resources to serve as an efficient nerve center for the network. The handling of information in the population field, is infinitely more complex than the already appreciable problems of information exchange in traditional scientific fields such as physiology, physics or biochemistry. Nevertheless, we badly need a scientific and technical information network to permit collaboration in the division of labor to help each information activity increase its own effectiveness by encouraging complementary efforts rather than unnecessary duplication, by facilitating information exchange and by reliance upon other centers for some kinds of specialized information.

We need to hammer out common understandings of what we mean by population and family planning and what phenomena or problems may usefully be subsumed under that rubric. We must strive for a more uniform and logical way of

classifying and storing information so that it may be retrieved with relative ease, arrayed and disseminated in a manner to facilitate the preparation of a variety of products and services such as: ongoing research inventories for scientific use; state-of-art reports and advice for program operators on a variety of subjects; status reports and suggestions about policy alternatives for policy makers; and general reviews of our population problems and choices for the enlightenment of the lay public whose wisdom and concern are crucial to problem-solving in a democratic society. For these common purposes we need an increasingly common vocabulary, and increasingly compatible hardware and software systems to facilitate exchanges of information and divisions of labor among the various governmental and private information centers and libraries now concerned with population matters around the world. We fully realize that such coherence of our rapidly growing knowledge relevant to population will not be simple or painless in attainment; but unless many organizations and individuals can subordinate jurisdictional prerogatives to the common cause of structuring, rationalizing, and sharing what we now know and hope to learn, one can only predict an incomprehensible "Babel" of intellectual anarchy in the population field.

As I have already indicated, a beginning has been made thorugh the collaborative efforts of the Agency for International Development and the Center for Population Research by convening some of the major "players" in the population information "game". As a result of our strategy session in January, several concrete steps have been identified as essential if we are to speed and amplify the impact of knowledge in solving the many population problems we face in the real world.

We propose to prepare an International Directory of Information Sources in the Population Field as a sort of population information "Yellow Pages" characterizing each group's subject matter specialties, its holdings, its services, its audiences, its recurring publications and other products, availability and means of access to its information and names of its key personnel. As this information is collected we propose to analyze and evaluate their total activities including redundancies in functions, in products and in audiences.

Closely related to the proposed "Yellow Pages" is the design and conduct of an international sample survey of information users and intermediaries through whom information flows in order to determine user needs and practices. We intend to develop a classification and analysis of sub-audiences, to identify potential users who are now overlooked, to assess existing constraints on effective information exchange andto recommend improvements and initiate pilot efforts toward solving the problems identified.

We propose a concerted effort toward the improvement of population library collection and reference methods around the world through the development of international classification schemes to meet the needs of researchers and administrators concerned with population problems and policies. Through consultation services to population libraries and information centers both at home and abroad, and through training for operational skills, we plan to introduce domestic and foreign population reference personnel to better methods and technology for information handling.

We propose to conduct pilot studies and develop alternative models for automated information services to enhance current indexing of publications related to population and the production of bibliographic journals

for speedy broad coverage which can augment scientific and technical information activities and publications now underway in the population field.

We hope to take these steps through one or more contracts funded collaboratively by the Agency for International Development and the Center for Population Research, NICHD. For guidance we plan to use a board of advisors consisting of the major players in the population information game to assure that what we discover and what we build will be solid contributions to our common purposes.

We envision the group of scientific and technical information specialists which we convened in January to serve as the nucleus of an expanding forum which we will call together periodically to exchange views, to pinpoint problems and opportunities in the scientific and technical information field, and to foster mutual support for one another's efforts to solve the problems encountered and to exploit the opportunities identified. We intend that the Center for Population Research will serve for the time being as the nerve center and switching point for communications among scientific and technical information activities and to help each of us steer inquiries from the outside to the source best able to provide the information needed. In short, we are embarking on a long and arduous undertaking which we think is as urgent as our population problems themselves.

Fortunately, we are not entirely pioneers. Various efforts in other fields can serve us well as models to consider and adapt according to our own needs as "population-niks". Many of you are probably familiar with the Educational Resources Information Centers system (ERIC), with the Air Pollution Technical Information Center (APTIC) or with the Committee on Scientific and Technical Information (COSATI) which has produced several

reports under the aegis of the Office of Science and Technology.

For the past few days I have been privileged to attend a meeting, convened by the National Agriculture Library, for representatives of land grant colleges struggling to enhance the efficient flow of relevant information concerning agricultural sciences to their varied audiences. From these and similar efforts, we can learn much. And as the population centers we will be discussing here today and tomorrow grow increasingly in strength, creativity and commitment, they themselves will be major participants in and contributors to mankind's efforts to address its greatest intellects and most relevant knowledge to the humane solution of one of its most grievous sets of problems.

In facing up to our responsibilities we can properly share the sobering sense of urgency which C. P. Snow summed up as follows:

> "It is the duty of all the rest of us, and perhaps most of all the generations which are going to live in what is now the future, to keep before the world its long-term fate. Peace. Food. No more people than the earth can take. That is the cause.
>
> "I should be less than honest if I told you that I thought it was likely to succeed. Yet, we should be less than human if we didn't try to make it. We live in our time. This is the responsibility of our time, and it is our own." [1]

[1] Snow, C. P., The State of Siege (New York: Charles Scribner's Sons) 1969, PP 43-44.